

REMARKS

Independent Claims 1, 10 and 11 are amended to accent the distinguishing characteristics of the claimed embodiments of the present application. With respect to the Examiner's objection of the drawings under 37 CFR 1.83(a), it is respectfully submitted that the drawings show every feature of the invention specified in the claims. Claim 2 has been amended in that the phrase "a magnetic ring" has been replaced by the term "ring-shaped" to overcome the Examiner's objection in the drawing. Claims 6 and 8 are amended to overcome the Examiner's rejection under 35 USC 112, second paragraph. All the amendments are supported by Figs. 4A & 4B and page 5, line 17 of the specification of the present application. No new matter has been added. Further examination and reconsideration in view of the amendments and the remarks provided below are respectfully requested. New claims 12-14 further claim that the magnet holder has a fixed length. These claims are supported by Figs. 3, 4A & 4B and pages 4-5 of the specification of the present application. No new matter has been added.

Applicants traverse the Examiner's objection to the title of the invention. The title, "Rotor Structure of Motor" is adequately descriptive.

Claims 6, 8 & 9 are rejected under 35 USC 112, second paragraph, for allegedly failing to particularly point out and distinctly claim the subject matter. In the Office Action dated June 28, 2001, the Examiner rejected the claims on the alleged basis that:

Applicant needs to explain the term "punching" in claim 6. In claim 7, what is meant by the term "bush is assembled to shaft by 'interfering'"? What is the bush interfering with? In claim 9, the term "riveting" needs explanation.

In response, Applicants respectfully contend that the word "punching" is habitually defined as a forging method performed by a punching machine, and thus the word "punching"

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used in the amended Claim 6 refers to the method for forming the magnet holder. Moreover, the word "riveting" used in Claim 9 refers to the method connecting the magnet holder and the bush being performed through a riveted joint, i.e. a connection performed by a rivet. In addition, the method for connecting the bush and the shaft disclosed in the present application is an interference assembly, as recited in amended Claim 8.

Therefore, in view of the foregoing, it is respectfully requested that the Examiner withdraw the rejections to Claims 6, 8 & 9 under 35 USC 112, second paragraph.

Claims 1-11 are rejected under 35 USC 102(b) as being anticipated by Hishida (US 5,160,866). In the rejection, the Examiner stated:

Hishida et al. discloses a magnet 338 having a first annular wall; a magnet holder 334 having a base and a second annular wall connected with first annular wall; a shaft 320 having one end mounted through base of magnet holder; and a stopper 318, a plurality of coils and the magnet holder is connected to one end of shaft 320 with a bush 354 (see figure 11).

Applicants respectfully traverse the Examiner's rejection of Claim 1 and contend that Hishida does not anticipate the claimed invention. The Examiner rejected Claims 1-11 on the basis that Hishida disclosed the invention as outlined above. MPEP 706.02 [Rejection on Prior Art] clearly states that rejections under 35 USC 102 require that "the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present." Hishida fails to teach every aspect of the claimed invention either explicitly or impliedly. The Examiner fails to particularly point out and distinctly explain how Hishida allegedly anticipates the claimed invention as it appears the Examiner is merely pointing to the structural elements allegedly disclosed by Hishida and not the particular manner in which said structural elements are arranged. The Examiner fails to demonstrate any teaching by Hishida of the formation of the magnet holder or that the bush is connected to the shaft by an interference fit.

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Hishida does not anticipate Claim 1, as amended. Although the Hishida patent discloses a spindle motor for rotating a recording disk, a stepping motor as recited in the amended Claim 1 of the present application is not taught in any way by the Hishida patent. In addition, the motor structure and function of the stepping motor are totally different from those of the spindle motor. The stepping motor is used for controlling the rotary precision, as recited in the discourse of page 1, lines 8-12 of the Applicant's specification "stepping motors are customarily used direct current (DC) motors for positioning applications requiring rapid acceleration and high speed with low loads. The stepping motor is used as a driving source for rotating an apparatus such as a disk recording medium, a printer and a manipulating arm". However, the spindle motor is supported by a CD-ROM or DVD-ROM plate for providing a high-speed horizontal rotation function.

Moreover, the stopper 318 according to the Office Action is a sleeve member 318 used for supporting a bearing unit 316 (col. 9, lines 16-20) and is not a stopper 15 as recited in the present application. The stopper 15 as recited in the present application is optionally moved to a proper position of the shaft 14 for fixing and supporting the shaft 4, and the stopper 15 could be repeatedly utilized without changing the size thereof. Therefore, the motor structure and the given function of the Hishida patent obviously are irrelevant to those of the present application. Furthermore, an improving effect for having a low rotational inertia in the rotor structure according to the present application is not available in the Hishida patent.

Hishida is irrelevant to the present application and is distinctly non-analogous art with the present application. Therefore, Claims 1, 10 and 11, as amended, are patentable over the prior art and the cited reference for the above-mentioned reasons.

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CONCLUSION

For the foregoing reasons, the Applicants believe pending claims 1-4 & 6-11 are allowable. A Notice of Allowance is respectfully requested. The Applicants' Attorney can be reached at (949) 718-5200 to discuss this response with the Examiner.

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Respectfully submitted,


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ATTACHMENT A

In the following, insertions are boldface type and underlined, and deletions are boldface type and enclosed in brackets.

The paragraphs starting on page 2, line 16 are amended as follows:

Although the rotor structure shown in Fig. 2A facilitates reducing the rotational inertia thereof, using too long of a supporting cylinder 12 will increase the inertia of the rotor.

[It is therefore tried by the applicant] Applicant endeavors to deal with the above situation encountered by the prior art.

The paragraph starting on page 5, line 13 is amended as follows:

Figs 4A and 4B show the positions of the stopper 15 mounted therein when the rotor length is longer and shorter, respectively. Referring to Fig. 4B, when the length H of a the magnet 5 is increased, the magnet holder 13 can continue to be used and the stopper 15 needs to be moved to a proper position corresponding to the increased length of the magnet 5 without increasing the rotational inertia[1] of the rotor.

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ATTACHMENT B

1. (First Amended) A rotor structure of a stepping motor, comprising:

a magnet having a first annular wall;

a magnet holder having a base and a second annular wall connected with said first annular wall of said magnet for fixing said magnet;

a shaft having one end mounted through said base of said magnet holder; and

a stopper [mounted in] fixed on the other end of said shaft in one location within a range of possible locations on said shaft, said one location being a function of the height of said magnet.

2. (First Amended) The rotor structure according to claim 1, wherein said magnet is [a magnetic ring] ring-shaped.

6. (First Amended) The rotor structure according to claim 1, wherein said magnet holder is [integrally] formed by punching.

8. (First Amended) The rotor structure according to claim 7, wherein said bush is [assembled] connected to said shaft by using an interference assembly [interfering].

10. (First Amended) A stepping motor structure, comprising:

a rotor; and

a stator having a plurality of coils for causing the rotation of said rotor, wherein said rotor comprises:

a magnet having a first annular wall;

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a magnet holder having a base and a second annular wall connected with said first annular wall of said magnet for fixing said magnet;
a shaft having one end mounted through said base of said magnet holder; and
a stopper [mounted in] fixed on the other end of said shaft in one position within a range of possible positions on said shaft, said one position being a function of the height of said magnet.

11. (First Amended) A rotor-stator assembly of a stepping motor having a relatively low inertia, comprising:

a rotor; and

a stator having a plurality of coils for causing the rotation of said rotor, wherein said rotor comprises:

a magnet having a first annular wall;

a magnet holder having a base and a second annular wall connected with said first annular wall of said magnet for fixing said magnet;

a shaft having one end mounted through said base of said magnet holder; and

a stopper [mounted in] fixed on the other end of said shaft in one position within a range of possible positions on said shaft, said one position being a function of the height of said magnet.

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